CLAIMS

1. An apparatus for cleaning and pre-milking a teat of a milking animal prior to the milking animal being milked comprising:

- a teat cleaning and pre-milking device (51) having cleaning means and pre-milking means, wherein, during cleaning and pre-milking procedures, said teat of the milking animal is exposed to said cleaning means and said pre-milking means, said apparatus being characterized in:

- pre-milking sensing means (60; 84) for establishing that milk is actually extracted from said teat of the milking animal during the cleaning and pre-milking procedures;

- milk quality sensing means (62; 84) for measuring a quality, preferably a somatic cell count value, of said milk extracted from said teat of the milking animal during the cleaning and pre-milking procedures;

- comparing means (64) for comparing the measured quality of said milk with a reference quality value; and

- indicating means (64) for indicating, depending on said comparison, whether or not milk drawn from said teat of the milking animal during a subsequent milking should be mixed with milk drawn from another milking animal.

2. The apparatus of claim 1 wherein

- said teat cleaning and pre-milking device (51) is provided with a teat receiving opening (55), and a teat receiving opening sealing means (56), and said pre-milking means is comprised of vacuum-supplying means (69) to create an under

pressure in said teat cleaning and pre-milking device, wherein, during said cleaning and pre-milking procedures, said teat of the milking animal is received by the teat receiving opening and said sealing means is in substantially airtight sealing contact with the udder of the milking animal.

3. The apparatus of claim 1 or 2 wherein

- said teat cleaning and pre-milking device is adapted to be used to expose each of the teats of the milking animal for said cleaning and pre-milking procedures in a sequential order;

- said pre-milking sensing means is adapted to establish that milk is actually extracted from each of the teats of the milking animal during said cleaning and pre-milking procedures;

- said milk quality sensing means is adapted to measure the quality of milk extracted from each of the teats of the milking animal during said cleaning and pre-milking procedures;

- said comparing means is adapted to compare the measured qualities of the milk from each of the teats of the milking animal with a respective reference quality value; and

- said indicating means is adapted to indicate, depending on said comparisons, whether or not milk drawn from each of the teats of the milking animal during a subsequent milking should be mixed with milk drawn from the respective other teats of the milking animal.

4. The apparatus of claim 1 or 2 comprising a number of said teat cleaning and pre-milking device, said pre-milking sensing means; and said milk quality sensing means, which corresponds to the number of teats of the milking animal.

5. The apparatus of any of claims 1-4 wherein any of said pre-milking sensing means and said milk quality sensing means is a device (60; 62) for non-contacting measurement.

6. The apparatus of claim 5 wherein said device for non-contacting measurement is an optical device (60; 62).

7. The apparatus of claim 6 comprising

- a light transparent chamber (70), through which said milk as obtained during the cleaning and pre-milking procedures is flowed, wherein

- said pre-milking sensing means is a device for determining the composition of a fluid in said light transparent chamber comprising a light source (68) for illuminating said light transparent chamber, and a light detector (72) for detecting light from said light source after having interacted with said fluid in said light transparent chamber.

8. The apparatus of any of claims 1-7 wherein said milk quality sensing means is a somatic cell count device (62).

9. The apparatus of any of claims 1-7 comprising

- a light transparent measuring chamber (80), through which said milk as obtained during the cleaning and pre-milking procedures is flowed, wherein

- said milk quality sensing means is a device for counting somatic cells or fat droplets comprising a light source system (78) for illuminating milk that flows through said measuring chamber; a two-dimensional camera system (82) including a lens system, preferably a microscope, for repeatedly recording two-dimensional digital images of illuminated milk that flows through said measuring chamber, where said two-dimensional

digital images are recorded through said lens system; and a digital image processing system for determining a somatic cell or fat droplet count score from said two-dimensional images.

10. The apparatus of any of claims 1-9 wherein any of said pre-milking sensing means and said milk quality sensing means is a device (84) for milk-contacting measurement having a sensor or probe (86) located inside said teat cleaning and pre-milking device.

11. The apparatus of claim 10 wherein said teat cleaning and pre-milking device comprises means for cleaning said sensor subsequent to having been in contact with milk during said pre-milking.

12. The apparatus of claim 10 or 11 wherein said device for milk-contacting measurement is any of a conductivity meter or an ion-sensitive sensor based device.

13. The apparatus of claim 12 wherein said conductivity meter or said ion-sensitive sensor based device is capable of distinguishing pre-milk from water or from a cleaning fluid based on different conductivity or different ion concentration of said pre-milk and said water or cleaning fluid.

14. The apparatus of any of claims 1-13 comprising

- means for receiving an indication of the identity of the milking animal, and optionally the identity of said teat of the milking animal; and

- means for adapting the cleaning and pre-milking procedures depending on the indicated identity of the milking animal, and optionally the identity of said teat of the milking animal.

15. A milking system comprises the apparatus of any of claims 1-14 and a device for milking the milking animal including means for directing milk from said teat of the milking animal individually to one of a plurality of locations depending on the indication of said indicating means.

16. The milking system of claim 15 wherein said device for milking the milking animal includes:

- a number of teat cups (11) corresponding to the number of teats of the milking animal, where the teat cups are capable of being attached to the teats of the milking animal and trough which milk is capable of being drawn to a common location;

- at least one further teat cup (23) capable of being attached to a teat of the milking animal and trough which milk is subsequently capable of being drawn individually to a location different than said common location; and

- means for attaching to said teat of the milking animal either one of the number of teat cups corresponding to the number of teats of the milking animal, or through said further teat cup depending on the indication of said indicating means; and for subsequently drawing milk there through.

17. The milking system of claim 15 or 16 wherein said milking system is automated and said device for milking the milking animal includes a milking robot.

18. A method for cleaning and pre-milking a teat of a milking animal prior to the milking animal being milked characterized by the steps of:

- cleaning and pre-milking said teat of the milking animal by a teat cleaning and pre-milking device (51) having cleaning means and pre-milking means;

- establishing that milk is actually extracted from said teat of the milking animal during pre-milking;

- measuring a quality, preferably a somatic cell count value, of said milk extracted from said teat of the milking animal during pre-milking;

- comparing the measured quality of said milk with a reference quality value; and

- indicating, depending on said comparison, whether or not milk drawn from said teat of the milking animal during a subsequent milking should be mixed with milk drawn from another milking animal.

19. The method of claim 18 wherein the steps of cleaning and pre-milking; establishing; measuring; comparing; and indicating are performed for each of the teats of the milking animal in a sequential order, or concurrently for all of the teats of the milking animal.

20. The method of claim 18 or 19 wherein any of the steps of establishing and measuring is performed by a device (60; 62) for non-contacting measurement, preferably an optical device.

21. The method of any of claims 18-20 wherein

- said milk quality is a value of the somatic cell count; and

- said step of measuring is performed by a device (62) for counting somatic cells or fat droplets comprising a light source system (78) for illuminating milk that flows through

said measuring chamber; a two-dimensional camera system (82) including a lens system, preferably a microscope, for repeatedly recording two-dimensional digital images of illuminated milk that flows through said measuring chamber, where said two-dimensional digital images are recorded through said lens system; and a digital image processing system for determining a somatic cell or fat droplet count score from said two-dimensional images.

22. The method of any of claims 18-21 wherein

- any of the steps of establishing and measuring is performed by a device (84) for milk-contacting measurement, preferably a conductivity meter or an ion-sensitive sensor based device, having a sensor or probe (86) located inside said teat cleaning and pre-milking device; and

- said method further comprises the step of cleaning said sensor subsequent to having been contact with milk during said pre-milking.

23. A method for milking said teat of the milking animal comprising the method for cleaning and pre-milking of any of claims 18-22 and the step of individually directing milk from said teat of the milking animal during milking to one of a plurality of locations depending on said indication whether or not milk drawn from said teat of the milking animal during a subsequent milking should be mixed with milk drawn from another milking animal.

24. The method of claim 23 wherein said step of individually directing milk from said teat of the milking animal during milking to one of a plurality of locations is performed by a milking system comprising a number of teat cups (11)

corresponding to the number of teats of the milking animal, where the teat cups are capable of being attached to the teats of the milking animal and trough which milk is capable of being drawn to a common location; at least one further teat cup (23) capable of being attached to a teat of the milking animal and trough which milk is subsequently capable of being drawn individually to a location different than said common location; and means for attaching to said teat of the milking animal either one of the number of teat cups corresponding to the number of teats of the milking animal, or through said further teat cup depending on said indication whether or not milk drawn from said teat of the milking animal during a subsequent milking should be mixed with milk drawn from another milking animal, and for subsequently drawing milk there through.

25. The method of claim 23 or 24 wherein said milking of said teat of the milking animal is performed automatically by a milking robot.